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Use of MOOCs to scale rigorous Citizen Science and its impact

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Use of MOOCs to scale rigorous Citizen Science and its impact

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A citizens' observatory with international reach

The GROW Observatory (EC H2020) is a citizens' observatory undertaking to deliver local and global impact by meaningfully engaging and supporting many people to take part in rigorous citizen science across wide geographical areas to better manage soil and grow food, while contributing to vital scientific environmental monitoring (Hemment et al., 2016).

Scaling up citizen science via MOOCs

Through a 'social and peer-to-peer' approach to Massive Online Open Courses (MOOCs), GROW is scaling participation in citizen science while maintaining scientific rigour. GROW is running 4 MOOCs this year via FutureLearn designed to enable participants to learn about soils, regenerative food growing practices and making the most of open data to create positive change (Hecker et al., 2018).

Creating communities of citizen scientists to foster long term engagement

Citizen science projects typically have a skewed pattern of participation, where a large proportion of volunteers contribute in small quantities and it is hard to sustain long term engagement. Following Jennett et al., (2016), GROW is testing how MOOCs can help overcome these barriers to support meaningful and sustained participation by offering a wide range of indirect opportunities for learning and creativity, including social peer to peer discussions, polls and quizzes, gamification elements, and online spaces for participants to share their own work and communicate with experts. MOOCs can deliver training to thousands of people concurrently, using models and tools to promote social learning that foster the formation of communities of practice and peer to peer support as well as multiple methods for learning and accessing expert knowledge, such as webinars.

Overcoming barriers to robust and engaging training in citizen science projects

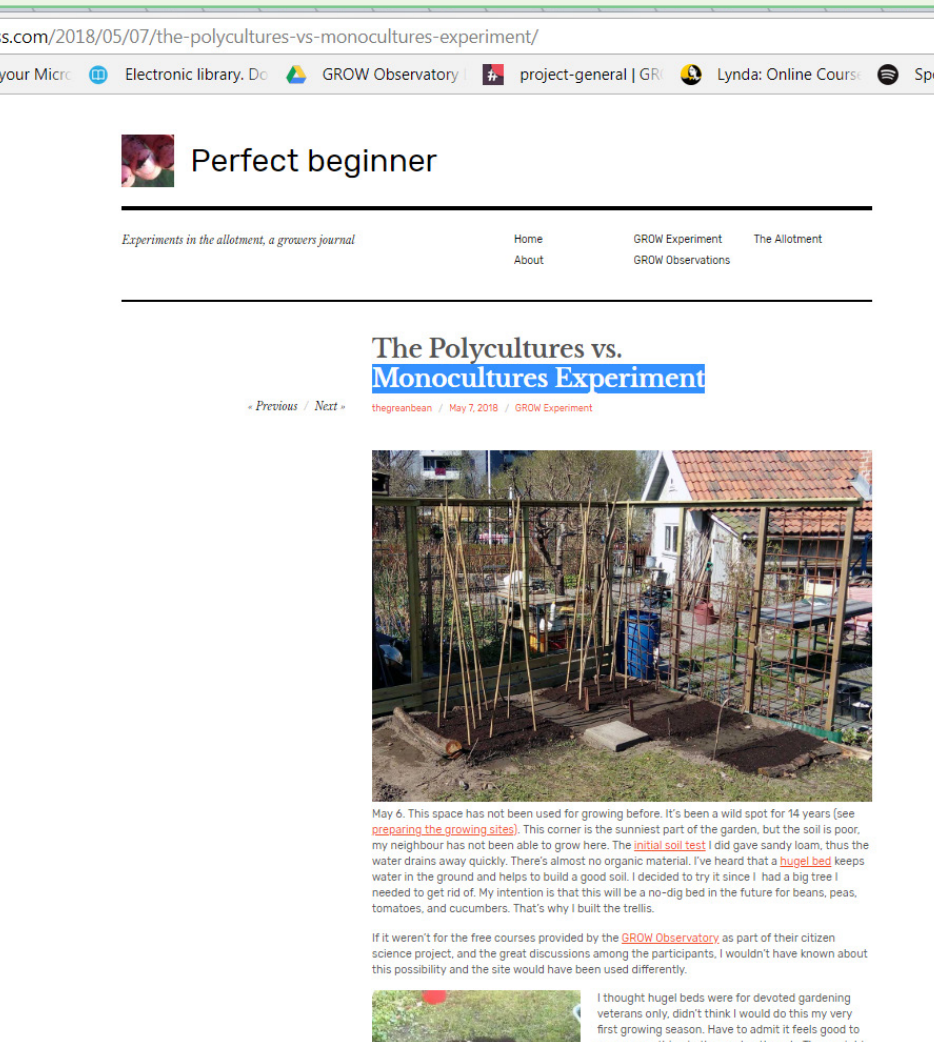
GROW MOOCs are engaging and supporting participants in the use of sensors, nutrient testing kits; land and soil survey; methods design; data collection and data awareness. We suggest these approaches may overcome common barriers to training for scientific protocols, data collection and sustainability currently experienced when supporting citizen science at scale (Wehn and Evers, 2015).



Map of MOOC participants



GROW MOOCs in 2018



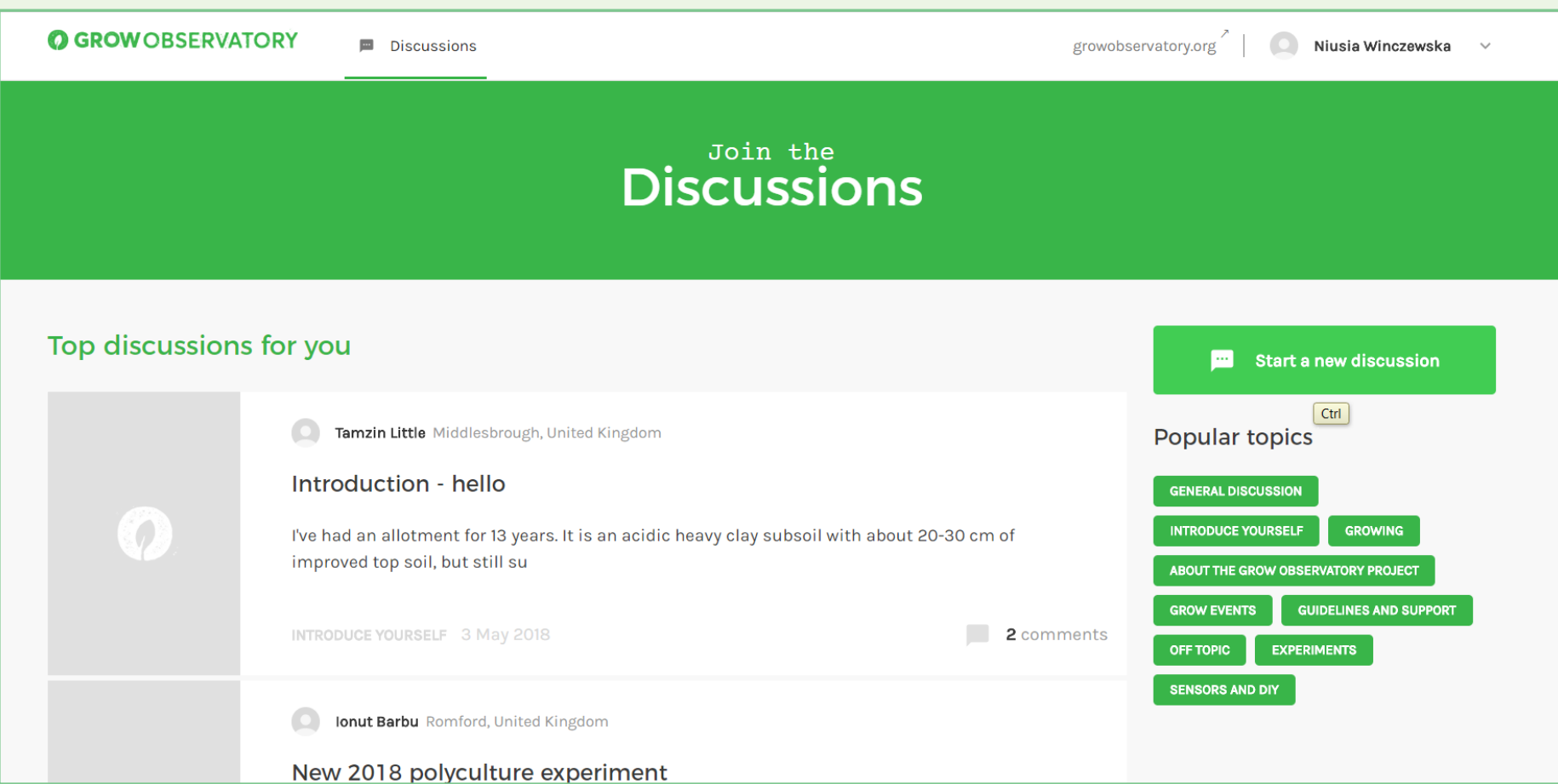
MOOC participant's blog



Parrot Flower Power soil sensor



Nutrient testing kit



GROW Forum

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Citizen Science: From Soil to Sky	Citizen Science: Sensing the World	Citizen Science: Living Soils, Growing Food
Soil texture & stone content	Sensors used by learners	Regenerative practices
Slope angle & canopy cover	CS projects learners are involved with	Polyculture experiment parameters
Regenerative practices		Land and Soil survey

References:

Hecker, S. et al. , 2018. Innovation in Citizen Science – Perspectives on Science-Policy Advances. *Citizen Science: Theory and Practice*, 3 (1), p.4
 Hemment, D., Amditis, A., Fritz, S., When, U., Moorthy, I. and Tsertou, A., 2016. The Next Generation Citizen Observatories. In: *The First International ECSA Citizen Science Conference* 2016, May 19 – 21, 2016, Berlin, Germany.
 Jennett, C., Kloetzer, L., Schneider, D., 2016. Motivations, learning and creativity in online citizen science. *Journal of Science Communication*, 15(3), article no. A05.
 Wehn, U. and Evers, J., 2015. The social innovation potential of ICT-enabled citizen observatories to increase eParticipation in local flood risk management. *Technology in Society*, 42, pp.187-198.